



Supplement of

Origin of water-soluble organic aerosols at the Maïdo high-altitude observatory, Réunion Island, in the tropical Indian Ocean

Sharmine Akter Simu et al.

Correspondence to: Yuzo Miyazaki (yuzom@lowtem.hokudai.ac.jp)

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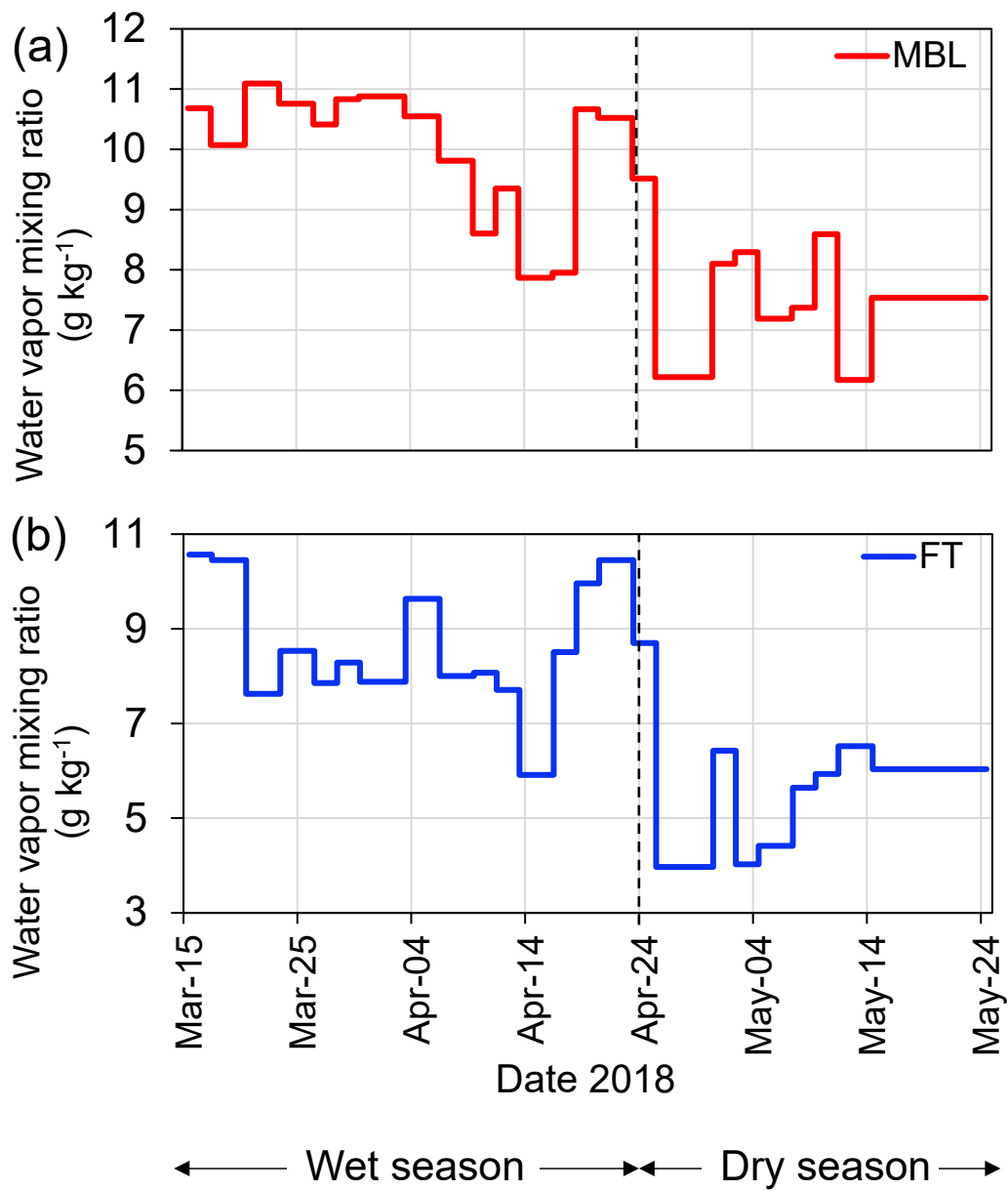


Figure S1. Time series of the water vapor mixing ratios under the (a) MBL and (b) FT conditions.

Table S1. Numbers of factors obtained for PMF solutions along with Q-values (i.e., values reached by the objective function which is minimized by the model), scaled residuals, and squared correlation coefficients (r^2) for WSOC. Based on Q values, distributions of scaled residuals, and r^2 as well as physical sense of source profiles and contributions, 6 factors were the most appropriate number of factors corresponding to meaningful sources in this study.

Total number of factors	Q (Robust)	Q (True)	Q (True) / Q (Robust)	Scaled residuals beyond 3 standard deviations for WSOC	r^2 for WSOC
4	36826	2766324	75.1	-4.75, -3.83, -3.28, 3.02, 3.29, 3.55, 3.80, 4.18, 4.47, 4.65, 6.43, 7.66, 7.95	0.58
5	27261	2033453	74.6	-3.48, -3.28, 3.27, 3.45, 3.73, 4.45, 6.54	0.78
6	18171	766656	42.2	3.15, 3.44, 3.90	0.86
7	10113	107990	10.7	-3.35, -3.13, 3.13, 3.59	0.86

Table S2. The data obtained in daytime. Start and end times indicate the timing of the filter exchange.

Sample ID	Start Date&Time (LT)	End Date&Time (LT)	WSOC (ngCm ⁻³)	$\delta^{13}\text{C}_{\text{WSOC}}$ (‰)	Sulfate (ng m ⁻³)	Na ⁺ (ng m ⁻³)	Br ⁻ (ng m ⁻³)	MSA (ng m ⁻³)	2-Methyltetrol (ng m ⁻³)	3-MBTCA (ng m ⁻³)	Pinic acid (ng m ⁻³)	Pinonic acid (ng m ⁻³)
MD-DY-02	2018/3/15 10:56	2018/3/17 13:30	96	-23.4	62	LOD	LOD	2.4	0.61	0.02	0.03	LOD
MD-DY-03	2018/3/17 13:42	2018/3/20 12:00	496	-21.5	1405	649	0.9	17.7	1.31	0.28	0.60	0.15
MD-DY-04	2018/3/20 12:15	2018/3/23 6:00	562	-23.0	917	11	1.2	13.9	3.56	1.63	0.40	0.57
MD-DY-05	2018/3/23 6:05	2018/3/26 5:54	417	-23.9	849	7	1.1	11.5	4.63	0.78	0.45	0.37
MD-DY-06	2018/3/26 6:04	2018/3/28 6:46	371	-23.0	572	2	1.3	9.4	0.04	0.42	0.10	0.26
MD-DY-07	2018/3/28 6:57	2018/3/30 6:35	284	-22.8	523	LOD	0.9	7.0	2.83	0.36	0.13	0.25
MD-DY-08	2018/3/30 7:03	2018/4/3 6:30	391	-23.9	415	8	0.9	9.6	13.49	0.28	0.16	0.22
MD-DY-09	2018/4/3 6:59	2018/4/6 6:00	165	-21.8	247	2	0.3	2.7	2.52	0.10	LOD	0.11
MD-DY-10	2018/4/6 6:15	2018/4/9 5:52	204	-23.3	223	7	0.6	6.0	LOD	LOD	LOD	LOD
MD-DY-12	2018/4/9 6:11	2018/4/11 6:21	250	-22.3	431	5	0.7	6.7	2.77	0.43	0.09	0.26
MD-DY-13	2018/4/11 6:32	2018/4/13 7:27	479	-21.9	526	13	0.9	14.0	1.46	0.29	LOD	0.22
MD-DY-15	2018/4/13 8:05	2018/4/16 6:05	271	-23.3	709	13	0.7	9.1	2.97	0.36	0.08	0.21
MD-DY-16	2018/4/16 6:13	2018/4/18 3:58	424	-23.9	745	6	0.7	11.4	1.24	0.52	0.17	0.43
MD-DY-17	2018/4/18 4:11	2018/4/20 8:40	215	-25.1	212	5	0.3	5.5	4.83	0.09	LOD	0.07
MD-DY-18	2018/4/20 8:48	2018/4/23 6:06	154	-24.5	274	6	0.3	4.7	4.23	0.08	0.04	0.12
MD-DY-19	2018/4/23 6:20	2018/4/25 6:10	102	-24.0	67	LOD	LOD	2.7	1.16	0.03	0.07	0.11
MD-DY-20	2018/4/25 6:20	2018/4/30 5:24	302	-24.7	11888	91	0.6	9.6	LOD	LOD	LOD	LOD
MD-DY-22	2018/4/30 6:20	2018/5/2 8:15	350	-24.8	33563	78	LOD	10.8	1.13	0.14	0.03	0.08
MD-DY-23	2018/5/2 8:35	2018/5/4 6:41	156	-25.1	1552	32	LOD	9.4	0.25	0.12	0.06	0.06
MD-DY-24	2018/5/4 7:04	2018/5/7 10:34	352	-24.6	1827	18	0.7	11.8	3.19	0.59	0.07	0.44
MD-DY-25	2018/5/7 11:16	2018/5/9 13:02	431	-25.1	22251	22	0.5	15.0	2.46	0.34	0.13	0.28
MD-DY-26	2018/5/9 13:20	2018/5/11 7:15	413	-24.9	2492	9	0.5	13.8	0.63	0.05	0.01	0.03
MD-DY-27	2018/5/11 8:18	2018/5/14 6:10	323	-22.2	648	8	0.6	13.8	0.39	0.14	LOD	0.09
MD-DY-28	2018/5/14 6:15	2018/5/24 5:30	297	-23.4	9340	11	0.5	9.0	1.09	0.50	0.17	0.19

Table S3. Same as Table S2, but for the nighttime.

Sample ID	Start Date&Time (LT)	End Date&Time (LT)	WSOC (ngCm ⁻³)	$\delta^{13}\text{C}_{\text{wsoc}}$ (‰)	Sulfate (ng m ⁻³)	Na ⁺ (ng m ⁻³)	Br ⁻ (ng m ⁻³)	MSA (ng m ⁻³)	2-Methyltetrol (ng m ⁻³)	3-MBTCA (ng m ⁻³)	Pinic acid (ng m ⁻³)	Pinonic acid (ng m ⁻³)
MD-NT-02	2018/3/15 11:14	2018/3/17 13:16	125	-22.1	31	301	LOD	2.7	LOD	LOD	LOD	0.01
MD-NT-03	2018/3/17 13:28	2018/3/20 12:00	228	-22.9	746	1969	LOD	10.8	LOD	LOD	LOD	LOD
MD-NT-04	2018/3/20 12:15	2018/3/23 6:00	182	-23.1	189	7	LOD	5.0	0.66	0.16	0.10	0.26
MD-NT-05	2018/3/23 6:05	2018/3/26 5:42	92	-23.7	88	4	LOD	2.5	LOD	LOD	LOD	LOD
MD-NT-06	2018/3/26 5:52	2018/3/28 7:00	86	-23.9	117	2	LOD	3.2	LOD	LOD	LOD	0.03
MD-NT-07	2018/3/28 7:10	2018/3/30 6:00	75	-23.4	77	LOD	LOD	4.7	0.40	LOD	0.02	0.03
MD-NT-08	2018/3/30 6:35	2018/4/3 7:39	91	-23.7	67	2	LOD	2.8	0.52	0.02	LOD	0.07
MD-NT-09	2018/4/3 7:59	2018/4/6 6:15	69	-26.4	201	23	LOD	1.8	0.40	LOD	LOD	0.03
MD-NT-10	2018/4/6 6:15	2018/4/9 5:52	80	-25.9	43	5	LOD	2.3	0.33	0.01	0.03	0.06
MD-NT-12	2018/4/9 6:11	2018/4/11 6:34	77	-17.0	70	3	LOD	2.8	0.06	LOD	0.02	0.04
MD-NT-13	2018/4/11 6:40	2018/4/13 9:08	191	-23.1	103	4	LOD	8.5	0.55	0.12	0.07	0.03
MD-NT-15	2018/4/13 9:42	2018/4/16 6:05	67	-24.0	105	2	LOD	3.7	0.14	LOD	0.03	0.07
MD-NT-16	2018/4/16 6:15	2018/4/18 4:14	77	-20.0	127	2	LOD	1.5	0.45	0.06	0.06	0.12
MD-NT-17	2018/4/18 4:25	2018/4/20 8:50	11	-22.9	131	3	LOD	2.2	0.41	LOD	0.02	0.01
MD-NT-18	2018/4/20 8:58	2018/4/23 6:07	10	-28.0	143	4	LOD	0.6	0.40	LOD	0.03	0.05
MD-NT-19	2018/4/23 6:25	2018/4/25 6:20	LOD	-25.4	21	9	LOD	2.0	0.07	LOD	0.02	0.07
MD-NT-20	2018/4/25 6:30	2018/4/30 5:24	LOD	-23.7	226	19	LOD	1.8	0.24	0.01	LOD	0.03
MD-NT-21	2018/4/30 5:24	2018/5/2 8:40	LOD	-25.3	1160	69	LOD	3.5	0.11	LOD	LOD	0.01
MD-NT-22	2018/5/2 8:55	2018/5/4 6:46	LOD	-27.0	1721	104	LOD	5.4	0.49	0.07	0.03	0.08
MD-NT-23	2018/5/4 7:06	2018/5/7 10:36	LOD	-23.6	498	32	LOD	3.2	0.13	0.01	0.01	LOD
MD-NT-24	2018/5/7 11:19	2018/5/9 13:05	LOD	-25.5	1248	34	LOD	6.5	1.62	0.02	0.01	0.04
MD-NT-25	2018/5/9 13:20	2018/5/11 8:30	LOD	NA	541	16	LOD	3.6	0.38	0.06	0.04	0.03
MD-NT-26	2018/5/11 9:00	2018/5/14 6:20	191	NA	418	2	LOD	12.8	1.51	0.39	0.24	0.06
MD-NT-27	2018/5/14 6:30	2018/5/24 6:15	67	NA	619	8	LOD	2.9	0.46	0.15	0.06	0.03